HTU-C / 3192

CLEI: T1L4SNSC_ _

ADTRAN
HTU-C
1245004L6

H D S L
○ LP1
○ LP2
○ DSX
○ ALM
○ LBK

C L O S
AIS
LBK
CDI

LBK
TM OUT
DIS — EN
BZS — AMI
T1 — FT1
DIS — EN
EXT ALM

TX
RX

RS 232

STATUS LEDs

LP1 / LP2	○ OFF	No synchronization between the HTU-C and the next HDSL unit (HRE or HTU-R) on loop1 / loop2
	● RED	Poor signal quality on loop1 / loop2
	● YELLOW	Marginal signal quality loop on loop1 / loop2
	● GREEN	Good signal quality on loop1 / loop2
	✱ FLASHING	Error detected at HTU-C or HTU-R
DSX	○ OFF	DSX-1 signal not detected
	✱ FLASHING	BPV, Frame Error (SF), CRC Error (ESF) is detected
	● GREEN	DSX-1 signal is present and synchronized
ALM	○ OFF	No alarm condition detected
	● RED	Local alarm condition detected (HTU-C), or local and remote alarm condition detected (HTU-C and HTU-R)
	● YELLOW	Remote alarm condition detected (HTU-R)
LBK	○ OFF	No active loopback
	✱ FLASHING	Armed but not in loopback
	● YELLOW	Local loopback is active

FACEPLATE SWITCH - SW1

Selects response of HTU-R upon Customer Loss of Signal

AIS
■ HTU-R generates unframed all 1s toward network upon loss of customer signal

LBK
■ HTU-R generates loopback towards network upon loss of customer signal

CDI
■ HTU-R generates framed all 1s toward network upon loss of customer signal

FACEPLATE SWITCH - SW3

Loopback Timeout
Enabled
■ Loopback timeout is enabled
Disabled
■ Loopback timeout is disabled
Manual Line Code Select
AMI
■ AMI line code is selected
B8ZS
■ B8ZS line code is selected
Latching Loopback
T1
■ Allows only standard T1 testing
FT1
■ Allows for fractional T1 testing
External Alarm
Enabled
■ External alarm is enabled
Disabled
■ External alarm is disabled

COMPLIANCE CODES

This product complies with UL 1459, third edition. It is intended to be installed in an enclosure with an Installation Code (IC) of "B" or "E" and in Restricted Access Locations only. Input current at maximum load is 1 A, and maximum output at overcurrent condition is 160 mA at -188 Vdc.

Code	Input	Output
Installation Code (IC)	A	–
Telecommunication Code (TC)	–	X
Power Code (PC)	F	C

CIRCUIT BOARD ROTARY SWITCH - SW2

Selects the DSX-1 Line Build Out
■ 0..........0 - sets LBO to 0-133 feet
■ 1..........133 - sets LBO to 133-266 feet
■ 2..........266 - sets LBO to 266-399 feet
■ 3..........399 - sets LBO to 399-533 feet
■ 4..........533 - sets LBO to 533-655 feet

Note: Positions 5,6 & 7 are not used.

CIRCUIT BOARD JUMPER - P1

Selects the span powering voltage

LV (–140 Vdc)
■ Used to span power circuit with 0 or 1 HRE

HV (–190 Vdc)
■ Used to span power circuit with multiple HREs

CIRCUIT BOARD JUMPER - P3

Selects the framing of the HDSL circuit

UNF
■ HTU-C operates in unframed mode

AUTO
■ HTU-C auto detects framing

DSX EQ BANTAM JACKS

Provides an intrusive test access point to the data stream

TX
■ Accesses the data stream being received from the local loop

RX
■ Accesses the data stream being transmitted to the local loop

RS-232 DB-9 CONNECTOR

■ Used to access performance monitoring data, perform loopbacks and provision units via VT100 emulation software such as Hyper Terminal – Private Edition and ProComm Plus.
■ Provision terminal port as follows:
   Data Rate — 19.2 kbps
   Asynchronous Data Format — eight data bits, no parity (none), one stop bit
■ When using a PC with terminal software, be sure to disable any power saving programs.

WARRANTY

Warranty for Carrier Networks products manufactured by ADTRAN and supplied under Buyer's order for use in the U.S. is ten (10) years. For a complete copy of ADTRAN's U.S. Carrier Networks Equipment Warranty: (877) 457-5007, Document #414.
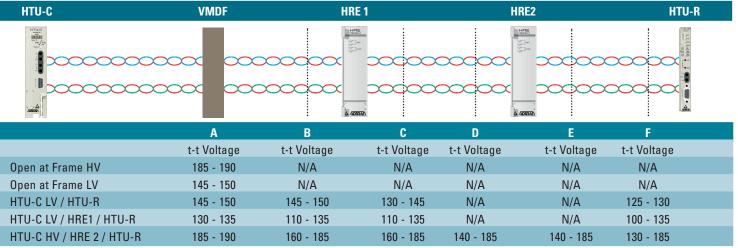
C A U T I O N !
SUBJECT TO ELECTROSTATIC DAMAGE OR DECREASE IN RELIABILITY.
HANDLING PRECAUTIONS REQUIRED.

For complete Installation and Maintenance: (877) 457-5007, Document #300. Please have your fax number available.

ADTRAN

TURN-UP & TROUBLESHOOTING GUIDE

Pricing and Availability 800.827.0807
Tech Support 800.726.8663
Return for Repair 256.963.8722
www.adtran.com
61245004L6-22B

INSERTION LOSS MEASUREMENTS

Frequency (kHz)	Maximum Loss Data (dB)
10000	15.00
50000	25.50
100000	30.00
150000	32.75
196000	35.00
200000	35.25

NOTE: If your TIMs is unable to transmit 200 kHz tone, set the TIMs to one of the frequencies shown above and compare the received signal to the maximum loss at that frequency.

HTU-C	VMDF	HRE 1	HRE2	HTU-R

	A	B	C	D	E	F
	t-t Voltage	t-t Voltage	t-t Voltage	t-t Voltage	t-t Voltage	t-t Voltage
Open at Frame HV	185 - 190	N/A	N/A	N/A	N/A	N/A
Open at Frame LV	145 - 150	N/A	N/A	N/A	N/A	N/A
HTU-C LV / HTU-R	145 - 150	145 - 150	130 - 145	N/A	N/A	125 - 130
HTU-C LV / HRE1 / HTU-R	130 - 135	110 - 135	110 - 135	N/A	N/A	100 - 135
HTU-C HV / HRE 2 / HTU-R	185 - 190	160 - 185	160 - 185	140 - 185	140 - 185	130 - 185

NOTE: All measurements taken with HTU-C installed. With the HTU-C unseated or with protector removed at VMDF, t-r resistance will be cable resistance plus 3 ohms (for either HRE or HTU-R).

Turn-up Guide

1. Set option switches according to circuit design and local practice.
2. Install HTU-C and HTU-R.
3. See reverse side of this job aid to ensure all LEDs are correct and synchronization has occurred.
   a) HTU-C will have red ALM LED if not connected to network. LP1 and LP2 should be solid green.
   b) HTU-R will have red ALM LED if no customer connected. LP1, LP2, line coding and framing (if not UNFR) LEDs should be illuminated.
4. If all LEDs are correct:
   a) Verify that the signal quality is the same on each loop. Ensure signal quality indicators do not fluctuate.
   b) Verify that the loop loss is within design limits. If there is a difference of more than 1 dB between the two loops, a problem exists with the cable pairs.
   c) If errors occur, use the Current System Status and Performance History screens to determine where they are occurring. See *Troubleshooting Guide* section.
5. If everything checks out, proceed with BERT testing.

Troubleshooting Guide

The HTU-C DSX LED is Flashing, but no Errors are Indicated by the HTU-R

- A BPV, Frame Error (SF) or CRC Error (ESF) has been detected at the DSX-1 interface. Possible network or wiring problem between the HTU-C and the DSX. This is not an indication of problems on the HDSL loops.

The HTU-R DS1 LED is Flashing, but no Errors are Indicated by the HTU-C

- A BPV, Frame Error (SF) or CRC Error (ESF) has been detected at the DS1 interface. This indicates a wiring problem or a B8ZS/AMI mismatch between the HTU-R and the customer equipment. This is not an indication of problems on the HDSL loops.

The HTU-R has Power, but LP1 and LP2 LEDs are Dark. The Unit cannot Sync with the HTU-C

- Simplex power for powering the HTU-R can be passed over cable pairs that contain load coils or that are too long for HDSL synchronization. Using a TIMs, verify the circuit is within design limits.
- The HTU-R will power up as long as there is at least one good conductor on each loop. To test, remove the protector plug at the MDF and measure t-r resistance to the HTU-R on both loops. The HTU-R will place a 3 ohm short between t-r on both loops. An extremely high impedance indicates an open conductor. An extremely low reading on one loop may indicate a t-r short in the field. In the field, measure t-t and t-r voltage with the HTU-C installed and compare to the chart above. If these voltages are not present, open pairs or mis-wiring is indicated. As with other circuits, standard resistance measurements between each conductor and ground should also be used to test for a grounded conductor.
- If the HTU-C is optioned for LV and there are two HREs in the circuit, the HTU-R could fail to power up normally. The LEDs on the HREs or HTU-R will flash at a rate of 3 times/second. Make sure the voltage option on the HTU-C is set to HV.
- A high resistance open which degrades to the point that it causes the circuit to lose sync can be "resealed" by reseating the HTU-C. Test the cable pairs before reseating the HTU-C.

Running Excessive Errors on the Loop

- Measure t-r resistance as described above. If the pairs are unbalanced by more than 4 ohms, or a measurement varies a great deal, this could indicate a high resistance open or an intermittent fault on the loop with the higher measurement. A TDR is typically required to locate this splice for repair.
- Excessively long bridged taps can also cause errors. Check the records and/or use a TDR to verify the location and length of bridged taps.
- Using ADTRAN's "Performance History" screen, it is often possible to see that many more errors are being received on a particular loop or at a particular unit. The fault will typically be very close to the unit receiving the most errors.

No Power at the HTU-R

- This could be caused by a loop with two open conductors. Measure t-r resistance from the MDF to the HTU-R or use the voltage chart to see which pair is open.
- Check the HV/LV option on the HTU-C and re-option if necessary.